1. A scanned optical system for use in optical probing applications, said scanned optical system enabling high Numerical Aperture and large field-of-view, comprising:

a light delivery system and focusing optics, said light delivery system and focusing optics forming an optical column with an optical axis;

said light delivery system configured to deliver light from a light source to illuminate a sample (DUT) having a sample surface;

said optical column being mounted on an xyz stage configured to scan the optical column across the DUT in the xy plane, said xy plane being parallel to said sample surface and z being perpendicular to said sample surface;

a control system operable to move the xyz stage so as to scan the optical column across the DUT;

said control system providing said xyz stage with a sufficiently large x-y scan range to provide said focusing optics with a field of view (FOV) of at least 100 x 100 microns for diffraction limited numerical aperture (NA) as high as 3.0;

said light being directed in a light beam substantially parallel to said optical axis.

2. The scanned optical system of claim 1, wherein said optical column includes light collection optics, said x-y scan range being sufficiently large to provide said light collection optics with a field of view of at least 100 x 100 microns.

3 The scanned optical system of claim 2, wherein said light collection optics are imaging optics.

4. An optical probe system including the scanned optical system of claim 1.

5. An optical probe system including the scanned optical system of claim 3, wherein said imaging optics form an image from reflected light from said DUT.

6. An optical probe system as in claim 5, wherein said light source is a laser having a narrow wavelength distribution centered on a wavelength value.

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7. An optical probe system for optically probing an electrical device on a DUT while operating the device under control of a tester, said tester operable to apply a sequence of test vectors to said device;

said optical probe system including the optical system of claim 1;

said optical probe system operable to form an image from monitoring the response from one of the group consisting of; the DUT and the tester; to said sequence of test vectors.

8. The optical probe system of claim 7, said system being selected from the group consisting of; a TIVA system, a LIVA system, an OBIRCH system, and an OBIC system.

9. The optical probe system of claim 7, said optical probe system being a soft defect localization system.

10. The optical probe system of claim 9, wherein said soft defect localization system is selected from the group consisting of: a RIL system and a TLS system.

11 A scanned optical system as in claim 2, wherein;

said light source is a laser having a narrow wavelength distribution centered on a wavelength value;

said optical column further includes a beamsplitter to separate reflected light at said laser wavelength value from photons emitted by the DUT; and

said beamsplitter diverts said photons emitted by said DUT into a photon emission timing port extending from said optical column.

12. An optical probe system including the scanned optical system of claim 11, said optical probe system providing photon emission timing analysis.

13. The scanned optical system of claim 1, wherein said focusing optics comprises an immersion lens.

14. The scanned optical system of claim 3, wherein said focusing optics and said imaging optics comprise an immersion lens.

15. The optical probe system of claim 5, wherein said focusing optics and said imaging optics comprise an immersion lens.

16. The optical probe system of claim 7, wherein said focusing optics comprise an immersion lens.

17. The scanned optical system of claim 11, wherein said focusing optics and said light collection optics comprise an immersion lens.

18. The scanned optical system of claim 13, wherein said immersion lens is an SIL.

19. The scanned optical system of claim 18, wherein said SIL has a NA of at least 2.5.

20. The scanned optical system of claim 14, wherein said immersion lens is an SIL.

21. The scanned optical system of claim 20, where said SIL has a NA of at least 2.5.

22. The optical probe system of claim 15, wherein said immersion lens is an SIL.

23. The optical probe system of claim 22, wherein said SIL has a NA of at least 2.5.

24. The optical probe system of claim 16, wherein said immersion lens is an SIL.

25. The optical probe system of claim 24, wherein said SIL has a NA of at least 2.5.

26. The scanned optical system of claim 17, wherein said immersion lens is an SIL.

27. The scanned optical system of claim 26, wherein said SIL has a NA of at least 2.5.

28. The scanned optical system of claim 18, further including means for retracting said SIL from said sample surface while scanning said optical column across said DUT.

29. The scanned optical system of claim 28, wherein said means for retracting said SIL from said sample surface comprises said SIL being mounted on a piezo-electric crystal, said piezo-electric crystal being operable so as to oscillate said SIL in the z-direction.

30. The scanned optical system of claim 28, wherein said means for retracting said SIL from said sample surface includes said SIL being mounted on a piezo-electric crystal, said piezo-electric crystal being operable so as to oscillate said SIL in the xy plane.

31. The scanned optical system of claim 28, wherein said means for retracting said SIL from said sample surface comprises said z-stage moving said SIL.

32. The scanned optical system of claim 18, wherein a wear-resistant coating having a thickness is provided for at least one of: said SIL and said sample surface.

33. The scanned optical system of claim 32, wherein said wear-resistant coating is provided for said SIL.

34. The scanned optical system of claim 33 wherein said wear-resistant coating has index of refraction higher than that of Si, said wear-resistant coating being NIR transparent

35. The scanned optical system of claim 33 wherein said thickness of said wear-resistant coating is smaller than the wavelength of said light.

36. The scanned optical system of claim 33 wherein said wear resistant coating is comprised of a material selected from the group consisting of:

NIR-transparent diamond film, diamond-like carbon film, titanium nitride, aluminum nitride, silicon carbide, and Bucky-balls.

37. A hybrid scanning lens optical system, including;

a light delivery system and focusing optics, said light delivery system and focusing optics forming an optical column with an optical axis;

said light delivery system configured to deliver light from a light source, said light forming a beam having a beam cross-sectional area, said beam illuminating a sample (DUT) having a sample surface;

means for scanning said focusing optics across the DUT in a scan region, said focusing optics being scanned in the xy plane, said xy plane being parallel to said sample surface and z being perpendicular to said sample surface;

said scanning of said focusing optics providing high resolution imaging within said scan region; and

means for providing low resolution imaging across a large area of said DUT.

38. The hybrid scanning lens optical system of claim 37, wherein said means for providing low resolution imaging across said large area of said DUT comprises a CCD imager.

39. The hybrid scanning lens optical system of claim 37, wherein said means for providing low resolution imaging across said entire DUT comprises:

said focusing optics comprising an objective lens having a small field of view;

a rotatable scan mirror in said optical column for raster scanning said beam across said DUT; and

a controller for rotating said scan mirror to raster scan said beam.

40. The hybrid scanning lens optical system of claim 37, wherein means for scanning said focusing optics comprises;

a fine xy stage for scanning said objective lens within said beam cross-sectional area;

a controller for scanning said fine xy stage.;

said optical column remaining fixed.

41. The hybrid scanning lens optical system of claim 37, wherein means for scanning said focusing optics comprises;

said optical column being mounted on an xyz stage configured to scan the optical column across the DUT in the xy plane, said xy plane being parallel to said sample surface and z being perpendicular to said sample surface;

a control system operable to move the xyz stage so as to scan the optical column across the DUT;

said control system providing said xyz stage with a sufficiently large x-y scan range to provide said focusing optics with a field of view (FOV) of at least 100 x 100 microns for effective numerical aperture (NA) as high as 3.0.

42. The hybrid scanning lens optical system of claim 39, including means for restricting the NA of said objective lens during said raster scanning.

43. The hybrid scanning lens optical system of claim 42, wherein said means for restricting the NA of said objective lens comprises an aperture positioned in said light beam within said optical column.

44. The scanned optical system of claim 1, wherein said xyz stage comprises;

a low resolution stage having a large scan range; and

a high resolution stage having a small scan range mounted onto said low resolution stage.

45. A method for optically probing an electrical device (DUT) comprising:

operating the device;

providing a light delivery system and focusing optics, said light delivery system and focusing optics forming an optical column with an optical axis;

said light delivery system configured to deliver light from a light source to illuminate a sample (DUT) having a sample surface;

said optical column being mounted on an xyz stage configured to scan the optical column across the DUT in the xy plane, said xy plane being parallel to said sample surface and z being perpendicular to said sample surface;

providing a control system operable to move the xyz stage so as to scan the optical column across the DUT;

scanning said optical column across said DUT with a sufficiently large x-y scan range to provide said focusing optics with a field of view (FOV) of at least 100 x 100 microns for effective numerical aperture (NA) as high as 3.0;

providing light to illuminate said sample and monitoring a response to said illumination with respect to the xy position of said stage

46. The method of claim 45, wherein said monitoring a response to said illumination includes forming an image of said DUT with respect to the xy position of said stage.

47. The method of claim 46, wherein said monitoring a response to said illumination further includes receiving reflected light from said DUT.

48. The method of claim 46, wherein said monitoring a response to said illumination further includes:

probing an electrical device on a DUT while operating the device under control of a tester, said tester operable to apply a sequence of test vectors to said device; and

monitoring the response from one of the group consisting of; the DUT and the tester; to said sequence of test vectors.